

INDIANA ENVIROTHON COMPETITION 2020 Information Booklet



A GREAT EXPERIENCE FOR:



Green Club Teams
Home School Teams
FFA Teams
Academic Teams
4-H Teams
Scout Teams
And more!

The 2020 Indiana Envirothon is sponsored by:

- Beck Center—Purdue University
- Environmental Education Association of Indiana
- Indiana Association of Soil and Water Conservation Districts
- Indiana Society of American Foresters
- Smithfield Foods

Visit us on the web at: <http://wordpress.iaswcd.org/events-2/envirothon/>

Find us on Facebook. Search: **Indiana Envirothon**

WHAT IS THE INDIANA ENVIROTHON?

The Indiana Envirothon promotes environmental education to high school aged students. The goal is to raise awareness of the importance of achieving and maintaining a natural balance between the quality of life and of the environment.

In-class curriculum is combined with hands-on field experiences to demonstrate the role people have in important environmental issues. Envirothon is an exciting, fun way for high school students to learn about the environment and the issues facing current and future generations.

At the completion of each contest, students are tested on five subjects: soils/land use, aquatic ecology, wildlife, forestry, and a current environmental issue, which changes each year.

Envirothon builds awareness. It helps show tomorrow's leaders the positive and negative effects individual actions have on the environment. Youth who take part understand differences between renewable and nonrenewable resources, understand environmental interactions and interdependencies, and know who provides information that can be used in the future for their benefit.

Students have fun while becoming environmentally aware during the competition!

HOW ENVIROTHON WORKS

Teams of five students (grades 9-12), representing a school or organization, compete at Indiana Envirothon contests by answering questions and by studying resource problems in each of the five environmental areas which include: soils/land use, aquatic ecology, wildlife, forestry, and a current environmental issue.

Students begin training for Envirothon by studying the resource materials that cover each natural resource area and those objectives related to them. Natural resource professionals speak to teams on a rotating basis during the Regional Contests, sharing job experiences and information on the resource areas. The teams are given tests covering the five resource areas. **The top teams from each Regional Contest** will be invited to compete at the Indiana State Envirothon Contest.

For this year's contests the top teams moving on to the State Contest will be determined as follows:

- Contests with 12 or more teams competing will send their top 3 teams.
- Contests with 11 or less teams competing will send their top 2 teams.

Before the Indiana State Envirothon Contest, the top teams from each regional contest will be provided a natural resource situation relating to the current environmental issue. At the contest, teams will conduct an oral presentation with their solution to a panel of judges.

The top team from the State Contest will represent Indiana in the National Conservation Foundation (NCF) Envirothon Contest. The NCF-Envirothon is a multi-day event. In 2018, the contest was held at Mount St. Mary's University in Emmitsburg, Maryland. Over 50 participating teams from the U.S., Canada, and China merged the knowledge from their home state/provincial contests with hands-on teaching stations during this six day contest. Written tests and oral presentations were again part of the contest.

AWARDS & RECOGNITION

1. Participation certificates are available upon request.
2. The top three placing teams at a regional event will receive medals for each of the five students on the team. The top teams will receive a plaque for their school.
3. At the Indiana Envirothon State Contest, medals will be given to the top three placing teams in each of the following categories: written tests, oral presentation, and overall. Plaques will also be given out for the top three teams. A traveling trophy will be given to the top overall team in the Indiana State Contest.
4. The team representing Indiana at the NCF-Envirothon competition will have registration fees paid for the 5 team members and 1 or 2 advisors, along with an additional undetermined monetary sponsorship to help defray other expenses by the Indiana Envirothon Committee. Travel expenses are the responsibility of the winning team. A portion of the expenses incurred MAY be reimbursed by Indiana Envirothon.

***Note: Some Objectives were re-written this year. Websites for recommended references are updated on a yearly basis. Please do not rely on previous year's printouts for website references.**

***Students should be able to relate all resource topics (soil/land use, aquatic ecology, forestry, wildlife) to Current Issue.**

INDIANA ENVIROTHON OFFICERS

President	Vice-President*	Secretary/Treasurer
Jan Came 3241 South 3rd Place Terre Haute, IN 47802 812-232-0193 ext 3 jan.came@in.nacdnet.net	Nicole Messacar 100 Legacy Plaza W LaPorte, IN 46350 219-362-2820 ext 3 nmesscar@laportecounty.com	Jeri Ziliak 1805 Main Street Mount Vernon, IN 47620 812-838-4191 ext 3 jeri.ziliak@in.nacdnet.net

**Chair for Appeals*

2020 CONTESTS & DATES

Teams will select the contest sites of their first and second choice. First choice will be given if space is available based on date registration is received. Two teams per school/organization may register. If additional teams from the school/organization would like to participate, permission must be requested from the regional coordinator and will be based on space availability. Regional Coordinators reserve the right to cancel contest if registration numbers are inadequate.

SOUTHWEST INDIANA

March 10, 2020
Warrick County 4H Fairgrounds
Boonville, IN
CONTACT: Jeri Ziliak
1805 Main Street, Mt. Vernon 47620
jeri.ziliak@in.nacdnet.net

NORTH CENTRAL INDIANA

March 18, 2020
Camp Buffalo
Monticello, IN
CONTACT: Darci Zolman
217 E Bell Drive, Warsaw, 46582
darci.zolman@in.nacdnet.net

SOUTH CENTRAL INDIANA

March 11, 2020
Seymour School—Ag & Farm Research
Seymour, IN
CONTACT: Christina Bruce
1919 Steven Ave., Bedford 47421
christina.bruce@in.nacdnet.net

CENTRAL INDIANA

March 18, 2020
Conner Prairie
Fishers, IN
CONTACT: Ginger Davis
1717 Pleasant St., Noblesville, 46060
ginger.davis@hamiltoncounty.in.gov

NORTHWEST INDIANA

March 11, 2020
Red Mill Park
La Porte, IN
CONTACT: Nicole Messacar
2857 W State Road 2, Ste B, LaPorte, 46350
nmessacar@laportecounty.org

NORTHEAST INDIANA

March 19, 2020
Peabody Library
Columbia City, IN
CONTACT: Nadean Lamle
788 W Connexion Way, Ste C,
Columbia City, 46725
nadean.lamle@in.nacdnet.net

EAST CENTRAL INDIANA

March 12, 2020
Hayes Arboretum
Richmond, IN
CONTACT: LuAnne Holeva
823 S Round Barn Rd, Ste 1, Richmond 47374
luanne.holeva@in.nacdnet.net

2020 INDIANA STATE CONTEST

April 29, 2020
Beck Center—Purdue University
CONTACT: leah.harden@in.nacdnet.net

WEST CENTRAL INDIANA

March 13, 2020
Ivy Tech Community College
Terre Haute, IN
CONTACT: Jan Came
3241 S 3rd Place, Terre Haute, 47802
jan.came@in.nacdnet.net

2020 NCF-ENVIROTHON CONTEST

July 26—August 1, 2020
University of Nebraska
Lincoln, Nebraska

*******REFERENCE MATERIALS FOR ALL SUBJECT AREAS*******

References listed were current and active on September 12th.

If one of the web links is no longer valid please contact your regional coordinator and check the Indiana Envirothon website for any updates

AQUATIC ECOLOGY REFERENCES

- **Volunteer Stream Monitoring Training Manual by Hoosier Riverwatch**
http://www.in.gov/idem/riverwatch/files/volunteer_monitoring_manual.pdf
Go to Adults and Advance Students: The Fundamentals of the Water Cycle and A Comprehensive Study of the Natural Water Cycle
- **USGS Water Resources**
<http://water.usgs.gov/education.html>
- **Agencies Working on Clean Water:**
<https://engineering.purdue.edu/watersheds/resources/WatershedAgencies.pdf>
Be familiar with the agencies, programs, and roles of each agency
- **Indiana Department of Environmental Management**
<https://www.in.gov/idem/nps/pages/watercycle/>
<https://www.in.gov/idem/nps/2487.htm>

AQUATIC ECOLOGY OBJECTIVES

1. Identify assisting agencies and laws that govern Indiana waters, and develop a working understanding of the programs which benefit our water resources.
2. Define a watershed and the interaction of its components.
3. Define and understand the difference between non-point source and point source water pollution, as well as types of water pollution (organic, inorganic, thermal, toxic, etc.) and their impacts.
4. Be able to conduct water tests and interpret data for assessing water quality ie: dissolved oxygen, BOD5, turbidity, nitrate/nitrite etc.
5. Identify aquatic organisms, be able to classify them by pollution tolerance groups, and determine their indication of aquatic health.
6. Understand the unique characteristics of freshwater resources (lakes and ponds, rivers and streams, reservoirs, wetlands, and groundwater).
7. Understand the basic concepts of hydrology and the water cycle.
8. Be familiar with the distribution of the Earth's water and understand water's changing states and processes of the Water Cycle.
9. Be familiar with citizens' simple actions that can be implemented to prevent nonpoint source pollution.
10. Be able to identify and understand the interaction of segments of a community where water pollution can occur.

FORESTRY REFERENCES

- **A Landowner's Guide to Sustainable Forestry in Indiana—Part 1**
<https://www.extension.purdue.edu/extmedia/FNR/FNR-180.pdf>
- **Importance of Hardwood Tree Planting**
<https://www.extension.purdue.edu/extmedia/FNR/FNR-219.pdf>
- **Planting Forest Trees and Shrubs in Indiana**
<https://www.extension.purdue.edu/extmedia/FNR/FNR-IDNR-36.pdf>
- **The Practice of Forestry in Indiana**
<http://www.in.gov/dnr/forestry/4411.htm>
All links except the complete final report for IN resident's perceptions.
- **Hardwood Ecosystem Experiment: Sustaining our Oak-Hickory Forests**
https://mdc.itap.purdue.edu/item.asp?Item_Number=FNR-542-WV
- **50 Trees of Indiana, T.E. Shaw, Purdue publication 4-H-15-80**
https://mdc.itap.purdue.edu/item.asp?Item_Number=4-H-15-80
- **Indiana Forestry Best Management Practices**
<https://www.in.gov/dnr/forestry/files/BMP.pdf>
- **A Landowner's Guide to Sustainable Forestry in Indiana – Part 5: Forests and Water**
<https://www.extension.purdue.edu/extmedia/FNR/FNR-184.pdf>

FORESTRY OBJECTIVES

1. Know the parts of a tree and be able to explain the tree's life cycle.
2. Identify common tree species without a key and identify specific or unusual trees & shrubs through the use of a key.
3. Understand the term silviculture and be able to explain the uses of the following silviculture techniques: thinning, prescribed burning, single tree & group tree selection, shelterwood method, clear-cutting with & without seed trees, & coppice management.
4. Know how to use forestry tools & equipment in order to measure tree diameter, height & basal area.
5. Understand how the following issues are affected by forest health & management: biodiversity, forest fragmentation, forest health, air quality, aesthetics, fire, global warming, water quality & recreation.
6. Understand how economic, social & ecological factors influence forest management decisions and policy affect sustainability.
7. Understand the economic value of forests and know many of the products they provide to people & society.
8. Know the typical forest structure: canopy, understory and ground layers and crown classes.
9. Understand forest ecology concepts and factors affecting them, including the relationship between soil and forest types, tree communities, regeneration, competition, and primary and secondary succession.
10. Understand what forestry best management practices (BMPs) are and how and why they are used to protect the forest and its soil and water resources while harvesting timber.
11. Understand the role of forests in protecting and enhancing water quality and that sustainable forest management is compatible with the protection of water resources.

SOILS/LAND USE REFERENCES

- **Indiana Soils: Evaluations and Conservation**
https://www.agry.purdue.edu/soils_judging/new_manual/index.html
- **Indiana Conservation Partnership, including partnering agencies links**
<http://icp.iaswcd.org/about/contact/>
- **Soil Biology and Land Management**
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052489.pdf
- **Guide to Texture by Feel**
www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/kthru6/?cid=nrcs142p2_054311
- **The 12 Orders of Soil Taxonomy**
<https://www.soils.org/files/s4t/soil-taxonomy-web-poster.pdf>

SOILS/LAND USE OBJECTIVES

1. Identify partnering agencies and be aware of the programs that assist land users with soil issues.
2. Know and understand the 5 soil forming factors, their influence on soil properties, and the soil forming processes.
3. Know basic characteristics of the 12 soil taxonomic orders and know what soil orders are in Indiana.
4. Be able to recognize and identify features of soil profiles, properties, characteristics, structures, and be able to determine soil texture.
5. Recognize the importance of soil and that biological diversity is important for soil health and the health of those connected to the soil.
6. Understand the relationships of soil ecosystems as well as hydrologic, carbon, and nutrient cycles to soil management.
7. Understand that soil fertility relates to physical and chemical properties of the soil including quantity of nutrients essential for plants, and why it reflects the physical, chemical, and biological state of the soil.
8. Understand how different land uses and conservation practices impact soils and erosion, and the importance of soil management to agriculture/rural areas, urban environments, and to clean water, including point and non-point source pollution
9. Understand key terminology relating to soils and land use.

WILDLIFE REFERENCES

- **ESA Basics**
http://www.fws.gov/endangered/esa-library/pdf/ESA_basics.pdf
- **Animal Tracks of IN**
Tamara Eder; Lone Pine Publishing, 2001; ISBN: 1-55105-307-1
- **American Wildlife & Plants: A Guide to Wildlife Food Habits**
Martin, Zim, Nelson; Dover Publications, Inc., 1951; ISBN: 0-486-20793-5
- **DNR Fish and Wildlife**
<http://www.in.gov/dnr/fishwild>
Be familiar with *About Us; Hunting Guide; 2019-2020 Seasons; Fishing Guide; Nongame & Endangered Wildlife; Nuisance Wildlife; Wildlife Resources; Wildlife Diseases; Animals; and Invasive Species*
- **Wildlife Guide | National Wildlife Federation**
<https://www.nwf.org/Educational-Resources/Wildlife-Guide/Pollinators, Threats to Wildlife, and Understanding Conservation>
- **Maryland State Envirothon Wildlife Study Guide**
https://dnr.maryland.gov/education/Documents/Wildlife_Study_Guide.pdf
- **Wildlife Resource Manual**
http://www.nysenvirothon.org/Referencesandother/Wildlife_Ecology.pdf

Envirothon Wildlife Glossary

<http://www.nysenvirothon.org/nys-envirothon-wildlife-glossary/>

WILDLIFE OBJECTIVES

1. Understand the role of federal and state agencies, and the programs and laws that govern Indiana wildlife & the protection, conservation, management, and enhancement of Indiana's wildlife & their habitat through improvement practices.
2. Identify Indiana wildlife species (mammals, birds, reptiles, amphibians, fish, crustaceans, mussels, insects, spiders, etc.) by physical characteristics, tracks, movement patterns, habitat suitability, & other unique characteristic signs.
3. Identify and differentiate between extinct, extirpated, endangered, threatened, & species of special concern. Understand the importance of biodiversity and the implications of its loss. Describe factors affecting Indiana species and the methods being used to improve existing populations.
4. Describe the current struggles of native Indiana wildlife species impacted by biological & physical agents as well as the introduction of invasive non-native species & cite examples of current and potential concerns to native populations.
5. Identify basic wildlife survival needs of Indiana wildlife, the niche they serve, & habitats where they may be found. Describe specific adaptations of Indiana wildlife species to its environment and its role in the ecosystem.
6. Describe situations that limit or enhance population growth and discuss the concept of carrying capacity & limiting factors. Be familiar with examples that have or may occur in Indiana.
7. Be able to name habitat requirements for wildlife and the factors that affect suitability. Recognize the importance of wildlife adapting to its environment and be able to explain advantages of anatomical, physiological, and/or behavioral adaptations of wildlife to their environment.
8. Understand wildlife & wildlife related terminology such as: habitat, ecosystem, biodiversity, herbivore, endangered, food web, niche, invasive, etc.
9. Be familiar with current events that may be impacting Indiana wildlife, whether year-round residents or migratory species. (*Due to how current the event there might not be a cited reference for this objective.*)

2020 Current Issue

Water Resources Management: Local Control and Local Solutions

2020 CURRENT ISSUE REFERENCES

- **Water Budgets: Foundations for Effective Water-Resources & Environmental Mgmt, USGS:**
<https://water.usgs.gov/watercensus/AdHocComm/Background/WaterBudgets-FoundationsforEffectiveWater-ResourcesandEnvironmentalManagement.pdf>
- **Integrated Water Resource Management- American Rivers**
<https://www.americanrivers.org/conservation-resources/integrated-water-management/what-is-integrated-water-management/>
(Visit all sections, steps, and links under “Explore more about integrated Water Mgmt”)
- **What is Hydrology?**
USGS https://www.usgs.gov/special-topic/water-science-school/science/what-hydrology?qt-science_center_objects=0#qt-science_center_objects
- **A Guide to Assessing Green Infrastructure Costs and Benefits for Flood Reduction- NOAA**
<https://coast.noaa.gov/data/digitalcoast/pdf/gi-cost-benefit.pdf>
- **Groundwater and Surface Water: A Single Resource. USGS Circular 1139**
<https://pubs.usgs.gov/circ/1998/1139/report.pdf>
- **Water Resource Management - ThinkTVPBS**
<https://www.youtube.com/watch?v=odngssDFMrU>
- **Indiana’s Water Supply and Economic Development- Indiana Chamber of Commerce**
<https://www.indianachamber.com/wp-content/uploads/2017/09/WaterStudyReport2014LoRes.pdf>
- **Indiana’s Water Shortage Plan- Indiana DNR**
<https://www.in.gov/dnr/water/files/watshplan.pdf>
- **Water Footprint Calculator**
<https://www.watercalculator.org/>
- **Planning for an Emergency Drinking Water Supply- EPA:**
https://www.epa.gov/sites/production/files/2015-03/documents/planning_for_an_emergency_drinking_water_supply.pdf
- **Floodplain Management in Indiana Quick Guide (IDNR, 2018):**
https://www.in.gov/dnr/water/files/wa-FP_Management_Indiana_QuickGuide.pdf

2020 CURRENT ISSUE LEARNING OBJECTIVES

1. Identify assisting agencies, tools, and laws that govern Indiana waters as a resource, and develop a working understanding of the programs which manage our water resources.
2. Be familiar with all components of a water budget, how they are monitored, and what part they play in a water budget.
3. Define and understand the process of integrated water management.
4. Understand the basic concepts of hydrology and the water cycle.
5. Knowledge of connection between groundwater and surface water, how they influence each other, and how human activities effect groundwater and surface water
6. Understand how to measure water availability and predict water use.
7. Understand how green infrastructure can manage water resources & the cost benefit process.
8. Define and describe Floodplain Protection, Impact of Floodway Construction Activities, National Flood Insurance Program and Flood Mitigation Programs.
9. Identify Indiana’s current knowledge of our water resources and what key elements will be needed to successfully manage our resources.
10. Discuss some surface water and groundwater best management practices used to help protect our water quality and quantity.

RULES & INFORMATION

1. Students must be currently enrolled in grades 9-12, as of the 2019-2020 school year at the time of the regional contest to be eligible to be contestants. Non-competing students/children cannot attend.
2. **Teams must consist of five contestants.** One alternate per team is *highly recommended*. Teams of 4 may use an alternate (1) from another willing team, but if that team places the team of 4 must have a candidate from their school/group to go to state contest.
Alternates not part of the 5 member team will not be allowed at the team table during testing. Alternates may be grouped together to take tests for exposure, but are not able to place at the contest.
3. Schools or organizations may participate in only one regional competition annually.
4. Registration fee is **\$70** for each team. Fee covers lunches for six (6) students and one (1) advisor. Each additional person brought will be charged an \$8 fee per person. Lunch will be provided. **State registration fee is \$75 for each team.**
5. A school or organization may send up to two (2) teams to regional competition. Teams from the same school must participate in the same regional competition. Regional competitions are limited to the first 25 teams who register by post-mark per site. **If additional teams from the same school/organization would like to participate, permission must be requested from the regional coordinator and will be based on space availability.**
6. Coaches and alternates may accompany their teams during the resource presentations at Indiana Regional Contests. **Coaches and alternates are not to accompany teams to any testing area including the Hands-on Tour during the Indiana State Envirothon Contest, the testing room, or judging rooms during team presentations.**
7. A pre-designated time will be allowed at each station for resource presentations.
8. Notes may be taken during each resource presentation, but cannot be used during the testing period. Please bring your own materials.
9. Contest will consist of 20 questions per test (100 questions total). All tests will be given at one time after teams have rotated through all five (5) resource presentations. Test questions will cover information in the suggested reference materials listed. Team members work together to answer test questions, submitting one completed test per team for each resource subject.
10. The top teams in each regional competition are eligible to compete at the state competition. In case of a tie, the Current Issue test scores will be used to determine the teams' placements. If a tie still remains then a predetermined order of resource subject test scores will determine placement. If a tie should still remain, the regional coordinator will determine protocol for placement and the decision will be final.
11. School dress code/appropriate dress will apply. Be prepared for inclement weather. Contests will take place rain, snow or shine unless a weather emergency is declared for the area.

12. The state winning team is eligible to compete at the NCF-Envirothon. If the state winning team cannot participate, the next place team may represent Indiana at the NCF-Envirothon competition. (see clarifications below)
13. In the event a procedural dispute or question that is not covered in this information or in its addendum, the issue will be decided by the Indiana Envirothon Appeals Committee. With respect to test questions, the decision of the Indiana Envirothon Test Committee is final.
14. Participants must sign Code of Conduct form, photo/video release and medical release. These must be received for each student upon arrival the day of contest.
15. Possession or use of cell phones , Apple watches, or other electronic devices by students at any Envirothon Contest is prohibited. Advisors may hold these items or they may be left in backpacks or locked vehicles.
16. Tobacco, intoxicants, or drugs are not allowed on site.
17. **NOTE: Non-adherence to these rules may prevent a team from placing.**

CLARIFICATIONS FOR TEAMS REPRESENTING IN AT THE NCF-ENVIROTHON

- The state winning team is eligible to compete at the NCF-Envirothon. (*The top 3 teams from the state contest must inform the Indiana State Envirothon Officers within 10 calendar days of the state contest of their availability to attend the NCF-Envirothon.*)
- The team must consist of the 5 students that participated as a team during the state contest. If the state winning team cannot participate due to a team member or members being unable to participate, the team must forfeit the opportunity to compete and the next place team(s) may represent Indiana at the NCF-Envirothon competition. Registration fees cover only the 5 original team members and up to 2 chaperones. Any other guests will be charged additional fees.
- The Indiana State Envirothon Officers and/or Committee will first offer the opportunity to the 2nd place team and if they are unable to participate, then the 3rd place team. If both of these teams are unable to participate, a final decision will be made by the Indiana State Envirothon Officers and/or Steering Committee to either continue down the list of teams to a pre-determined placement or choose not to have Indiana represented at the NCF-Envirothon.
- The decision of the Indiana State Envirothon Officers and/or Steering Committee on this matter will be final.
- The original winning team may request the Indiana State Envirothon Officers and/or Committee to petition the NCF-Envirothon for last minute replacements. The decision will be decided upon by the Indiana State Envirothon Officers and/or Steering Committee and that decision will be final. Replacement of team members will be based upon emergency situations.

INDIANA ACADEMIC STANDARDS

Check the Indiana Envirothon website: <http://iaswcd.org/events-2/envirothon/>